

REMARKS

Claims 1-12 and 18 are pending in this application, and in the Office Action, the Examiner rejected all of these claims under 35 U.S.C. 112 as being indefinite. Claims 1, 2, 4 and 18 were further rejected under 35 U.S.C. 102 as being fully anticipated by U.S. patent application publication 2004/0124450 A1 (Yeap), and Claims 6 and 7 were further rejected under 35 U.S.C. 103 as being unpatentable over Yeap. Claims 1, 5, 6 and 18 were also rejected under 35 U.S.C. 102 as being fully anticipated by U.S. Patent 5,168,072 (Moslehi). In addition, the Examiner objected to the Abstract, and object to an informality in Claim 18.

In the Office Action, the Examiner also indicated that Claim 3 would be allowable if appropriately rewritten and amended to overcome the rejection under 35 U.S.C. 112, and that Claim 8 would be allowable if amended to overcome the rejection under 35 U.S.C. 112.

In objecting to the Abstract, the Examiner objected to the phrase "source and drain diffusion region," and this phrase is being changed, as the Examiner suggested, to "source and drain diffusion regions." Also, Claim 18 is being amended to add a period at the end of the claim. In view of these changes, the Examiner is asked to reconsider and to withdraw the objections to the Abstract and to Claim 18.

The rejection of the claims under 35 U.S.C. 112 is based on several phrases that occur in various claims. In particular, the Examiner objected to the phrases "second layer," "forming a second spacer ...across the gate stack," and "source and drain regions extensions." This opportunity is being taken to change these phrases as the Examiner suggested. For example, in Claims 1 and 5, "second layer" is being changed to "second gate layer," and Claims 2 and 3 are being amended to indicate that the second or third spacer is formed around the first gate layer.

Also, Claims 2, 4 and 8 are being amended to use the phrase "source and drain extension regions."

In light of the above comments, it is believed that all of Claims 1-12 and 18 are clear and definite and fully comply with 35 U.S.C. 112. The Examiner is, accordingly, respectfully requested to reconsider and to withdraw the rejection of these claims under 35 U.S.C. 112.

Moreover, because Claims 8-12 were not rejected over the prior art, these changes to Claim 8 place Claims 8-12 in condition for allowance.

With respect to the rejections of Claims 1, 2, 4, 5, 6, 7 and 18 over the prior art, Applicants note that there is a very important difference between the present invention and the procedure disclosed in Yeap. In particular, with the method described in Yeap, the spacer around the gate stack is used to protect that gate stack when the substrate is doped, while with the instant invention, the spacer around the gate stack is used to mask the semiconductor substrate when the gate stack is doped.

To elaborate, the present invention relates to the use of a disposable spacer, in the fabrication of semiconductor devices, to facilitate post doping of the gate conductor without disturbing the optimum source and drain doping profile. In the method of the instant invention, a gate stack, comprised of first and second layers, is formed on a dielectric layer, and a disposable spacer is formed around those first and second layers of the gate stack. The second layer of the gate stack is removed, and then ions are implanted into the remaining first layer. In this implantation process, the disposable spacer keeps the implant away from the critical regions of the source/drain diffusion.

Yeap, et al. describes a procedure for forming an integrated circuit, and in particular, an integrated circuit having a gate structure comprised of first and second layers, and where that

second layer is removed. As explained in Yeap, et al. a recess, which can cause a problem, can occur in the substrate during normal fabrication process. This problem can be overcome by keeping a spacer around the gate stack to mask that gate until the semiconductor substrate is doped.

Moslehi likewise fails to disclose or suggest the above-discussed feature of the invention. Moslehi describes a fabrication process in which a spacer is provided around a gate stack; but here too, that spacer is not used to mask the semiconductor substrate while the gate stack is doped.

Independent Claims 1 and 5 are being amended to better describe the above-discussed feature of the invention. Specifically, both of these claims are being amended to positively set forth the step of using the spacer, during the implanting step, to mask the substrate of the semiconductor device from the ions used in said implanting step. Neither Yeap, et al. nor Moslehi discloses or suggests this feature of the invention.

This feature of the invention is of utility because, as explained in detail in the present application, it allows a deep, doping implantation of the gate layer, and this can be done while keeping doping implants away from critical source/drain regions.

The other references of record have been reviewed, and these other references, whether they are considered individually or in combination, also do not disclose or suggest the above-discussed feature of the invention.

Because of the above-discussed differences between Claims 1 and 5 and the prior art, and because of the advantages associated with those differences, claims 1 patentably distinguishes over the prior art and is allowable. Claims 2-4, 6, 7 and 18 are dependent from Claim 1 and are allowable therewith. The Examiner is, thus, asked to reconsider and to withdraw the rejection of

Claims 1, 2, 4, 5, 6 and 18 under 35 U.S.C. 102, and the rejection of Claims 6 and 7 under 35 U.S.C. 103, and to allow Claims 1-4, 6, 7 and 18.

For the reasons set forth above, the Examiner is asked to reconsider and to withdraw the objections to the Abstract and to the informality in Claim 18. The Examiner is also requested to reconsider and to withdraw the rejection of Claims 1, 2, 4, 5, 6 and 18 under 35 U.S.C. 102, the rejection of Claims 6 and 7 under 35 U.S.C. 103, and the rejection of Claims 1-12 and 18 under 35 U.S.C. 112, and to allow Claims 1-12 and 18. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

*John S. Sensny*  
John S. Sensny  
Registration No. 28,757  
Attorney for Applicants

Scully, Scott, Murphy & Presser  
400 Garden City Plaza – Suite 300  
Garden City, New York 11530  
(516) 742-4343

JSS:jy